FOURTH EDITION
for AQA

Psychology A Level
Year 1 and AS

THE TEACHER’S COMPANION

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OXFORD
TOPIC: Characteristics of memory: STM and LTM

Super simple summary: Capacity of STM

This activity encourages students to consolidate their understanding into a simple revision sheet that can be used closer to examinations. It helps students identify any misundertanding or missed information.

As students to complete a summary for each of the following:
- Span technique
- 7±2
- Chunking
- Influence of stimuli
- Influence of size of chunks
- Influence of age.

The first three phrases relate to knowledge of short-term memory (STM) capacity and can be used to answer 'outline' and 'describe' questions.

Ask students to complete a summary for each of the exam responses shown on Handout 33 to illustrate outline comments and evaluative comments before marking and providing improvements.

Candidate A: This candidate has identified some of the findings but failed to include data from free-recall tasks. An attempt is made to evaluate the findings but this is vague and no real point is made. As such, this answer would fall into the level 1 mark band.

Candidate B: This response is an improvement on that of Candidate A in terms of outlining findings as both photo-recognition and free-recall for both 15 and 48 years are noted. However, evaluation is missing from this answer and so it remains at level 1.

Candidate C: Both aspects of the question are addressed well here so it would meet the requirements for level 2. The outline of findings is accurate and detailed while a clear evaluative comment is made. This could be further improved by mentioning that rehearsal of the yearbook is an extraneous variable that should have been controlled. Another issue may be how popular a person was at school, those who had a wider social network or became involved in more extra-curricular activities may be able to remember more of their classmates than those with a limited circle of friends.

As an introduction to the duration of LTM I (RG) find beginning the lesson with a quiz from the students’ childhood really gets them thinking about how powerful their own LTMs are. Each round targets limited circle of friends. As an introduction to the duration of LTM II (RG) students may find it useful to draw the model or complete a label the diagram to familiarise themselves with the terminology.

TOPIC: Characteristics of memory: STM and LTM

The duration of STM

More able students can be challenged to complete each summary without using their revision notes then, using a different coloured ink, add any missed information from their class notes. Less able students may need to use their class notes to complete each key phrase or cards could be created for each phrase for students to match up. Allowing students time after working alone to share with a peer may help them identify any missing information or inaccuracies.

TOPIC: Characteristics of memory: STM and LTM

The duration of LTM

Less able students may benefit from being provided with a key word sheet to support them in re-writing each statement using psychological terminology. Other students may wish to use a textbook or class notes to identify terms, while more able can be challenged to use their memory of the model to complete the task.
Handout 38

More-able students could be assigned the task of running a version of this experiment with the rest of the class acting as participants. This would reinforce the planning of research while the participants will consolidate their understanding of the procedure. Initial questions relating to research methods provide the opportunity to discuss and critique each other's work. While later questions address higher-order thinking in terms of making links and predictions.

References


Handout 37

Students can be paired to work through both highlighting activities on Handout 37. For example, two students of similar ability regarding understanding of essay structure can work through each task at their own pace, discussing their ideas. Students who quickly identify the different elements of the PEELE evaluative paragraph can be challenged to create their own plan to share with the class or improve the evaluative comment from the first extract.

References


The duration of STM

What are the limitations of using students attending university for this investigation?

Why did Peterson & Peterson use a distraction task (counting backwards) between the learning phase and recall in each trial?

Why do you think Peterson & Peterson tested recall using meaningless consonant syllables such as THX?

Lloyd and Margaret Peterson (1959) studied the duration of STM, using 24 students attending their university. Each participant was tested over eight trials. On each trial a participant was given a consonant syllable and a three-digit number (e.g. THX 512 or HJS 384). They were asked to recall the consonant syllable after a retention interval of 3, 6, 9, 12, 15 or 18 seconds. During the retention interval they had to count backwards from their three-digit number. Participants, on average, were 90% correct over 3 seconds, 20% correct after 9 seconds and only 2% correct after 18 seconds. This suggests that STM has a very short duration, less than 18 seconds – as long as verbal rehearsal is prevented.

What are the limitations of using meaningless constant syllables such as THX?

Sketch a graph of the findings. Be sure to label each axis correctly and give a suitable title explaining what the graph represents.

Why might Peterson & Peterson’s findings be said to show the effect of displacement rather than decay? What implication does this have on their conclusions regarding STM duration?

The duration of LTM

Read the exam responses carefully and decide what marks you would award, be sure to justify your decision. Consider what improvements might be made to increase the final mark.

‘Briefly outline and evaluate the findings of any one study into the duration of long-term memory.’ (4 marks)

Candidate A

Bharick conducted a study to test the duration of LTM using participants’ recall of yearbook photos. 15 years after graduation, recall of school friends and acquaintances showed 90% accuracy when asked to identify faces, but this dropped to 70% after 48 years.

However, the validity of the results may be questioned as the procedure may not have tested LTM correctly.

Candidate B

A photo-recognition task in which participants were asked to identify faces showed 90% recall accuracy after 15 years but declined to 70% after 48 years. In a free-recall task requiring participants to list names of classmates they could recall, accuracy was 60% at 15 years but dropped to 30% after 48 years.

Candidate C

Recall using a cue, such as photo-recognition from yearbook photos, showed 90% accuracy after 15 years but only 70% accuracy after 48 years. When asked to list names of people participants went to school with, free-recall accuracy after 15 years was 60% which dropped dramatically to 30% after 48 years.

The validity of these LTMs could be questioned as participants may have regularly looked through their yearbook or even have continued contact with school friends so would regularly rehearse their memories.

The mark scheme is as follows:

Level 2

3–4 marks

AO1: findings are clearly outlined and accurately reported.

AO3: Evaluation/analysis is effective, explicitly linked to the findings outlined.

Level 1

1–2 marks

AO1: Findings are clearly outlined but no evaluation is given.

OR, findings and evaluation (AO3) are incomplete and may have some inaccuracies.

0 marks

No relevant content is given.
Describing the MSM

1. Replace the words in bold with psychological terminology.
2. Colour code each textbox to identify whether the comments refer to the structure of memory or the process in which memory moves through the system.

<table>
<thead>
<tr>
<th>Things in the environment enter the first memory store.</th>
</tr>
</thead>
<tbody>
<tr>
<td>This store can handle lots of different types of information but cannot cope with a lot of information at once or for a very long time.</td>
</tr>
<tr>
<td>Information can be lost from this store by fading away.</td>
</tr>
<tr>
<td>If noticed information moves to the second memory store.</td>
</tr>
<tr>
<td>This store can only hold a few items for a few seconds. It holds information in the form of sounds.</td>
</tr>
<tr>
<td>Information is lost by fading away or being pushed out by other items.</td>
</tr>
<tr>
<td>However, repeating the items again and again can maintain the memory in this store.</td>
</tr>
<tr>
<td>Adding meaning to the information can move it to the final store.</td>
</tr>
<tr>
<td>Here a lot of items can be held for a long time. Information is meaningful.</td>
</tr>
<tr>
<td>Information is lost by fading away or becoming muddled with other items.</td>
</tr>
<tr>
<td>Information flows along a line in the model and each store is one single block.</td>
</tr>
</tbody>
</table>

MSM essay practice

‘Outline and evaluate the multi-store model (MSM).’ (8 marks)

...According to this model, information reaches the brain from the senses (sound, sight etc.). This information enters the sensory register. The information that receives our attention is transferred to our short-term memory (STM) for further processing. The MSM presents the STM as a simple concept; it is often drawn as a box in diagrams. This may be a limitation of the model as some argue STM is much more complex and contains different components that attend to different types of information. The STM is seen as very limited by the model and information must be constantly rehearsed for it to be held in STM for longer than 30 seconds...

To reach the higher levels of the mark scheme your answer needs to show a good level of detail for AO1 outline of the structures and processes of the MSM. For example, rather than stating limited duration, the extract above identifies duration as 30 seconds. To access the higher levels at AO3 your evaluative comments need to be developed and relate specifically to the MSM as an explanation of memory.

A study that supports the MSM is Glanzer and Cunitz’s Serial Position Curve. They tested people using a list of words which must be recalled. Their study found that the words at the start of the list (the primary information) was remembered well due to maintenance rehearsal moving it to LTM; also the words towards the end of the list (recency information) were remembered as they were still in STM. Words in the middle had been either displaced or decayed. In a later variation, they made participants count backwards in 3s before recalling and the graph showed that more of the recency words were forgotten as they were lost due to lack of rehearsal. These findings support the MSM explanation of memory as they suggest STM and LTM are two separate stores and that rehearsal is the process used to transfer information as the model suggested.

Annotate this paragraph to illustrate how to structure an evaluative comment.

Point – are you supporting or criticizing the MSM?
Evidence – explain relevant research evidence.
Expansion – Add further detail such as another research finding.
Link – relate back to the MSM: does this evidence increase the validity of the model?

Can you apply the PEEL structure to improve the evaluation comment given in the first extract on this handout?
Baddeley et al. (1975a)

**Get evaluating!**
What are the strengths and limitations of using a laboratory experiment to investigate the working memory model?

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**Evidence for the phonological loop and articulatory control process**

**Identify the operationalised IV in this experiment?**

**Identify the operationalised DV in this experiment?**

**Write a directional hypothesis for this experiment.**

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**Aim:** to investigate the existence of a phonological loop in STM.

**Procedure:** Participants saw everyday words displayed very quickly one after the other. They were then asked to write the words seen in serial order (the same order as on the list).

**Condition 1** – the list contained five one-syllable English words e.g. tree, once, pain.

**Condition 2** – the list contained five polysyllabic (many syllables) English words e.g. university, recommendation, establishment.

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**Findings:** From analysing several trials Baddeley found participants recalled the shorter, one-syllable words much better than the polysyllabic words. He called this the **word length effect.**

**Conclusions:** The phonological loop has a role in the capacity of STM. The amount you can hold in your STM is determined by the length of time it takes to say the words NOT the number of items. It seems that the phonological loop holds the amount of information that you can say in 2 seconds.

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**Making links:** How can Baddeley’s findings be used to criticize Miller’s ‘Magic number 7’ view of STM capacity?

What might Baddeley’s research suggest about the size of chunks when trying to increase the capacity of STM?

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**Making predictions:** What do you think happened when participants were given an articulatory suppression task such as chanting ‘the, the, the’ while viewing the word lists?

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Baddeley et al. (1975b)

**Evidence for the visuo-spatial sketchpad.**

**Task 1.**

**Aim:** to investigate the existence of the visuo-spatial sketchpad in STM.

**Procedure:** Participants were asked to visualise a letter and describe the angles at each point of that letter at the same time as completing a visual tracking task.

**Task 1** – Imagine a letter. As you move round the letter, if an angle falls on the top or bottom line then say ‘YES’ aloud, if the angle falls anywhere else say ‘NO’.

**Task 2** – Track the movement of a dot of light with a pointer.

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**Findings:** Why did participants find it really hard to complete the two tasks simultaneously?

When asked to perform Task 2 while carrying out a verbal task such as saying ‘the, the, the’, rather than another visual task, participants performed much better. Why?

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**Conclusions:** This investigation could be said to support the existence of separate stores in STM because…

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**Making links:** Which method do you feel is a more successful exploration of working memory model; laboratory investigations such as those by Baddeley et al. (1975a/b) or case studies such as KF (Warrington 1970)?